IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

HONG WANG, ET AL.

Application No.: 10/632,431

Filed: July 31, 2003

For: METHOD AND APPARATUS FOR AFFINITY-GUIDED
SPECULATIVE HELPER THREADS IN CHIP
MULTIPROCESSORS

Art Group: 2181

Examiner: MOLL, JESSE R

INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. §1.97

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

In accordance with the duty of disclosure, enclosed is a copy of IDS Citation Form
PTO/SB/08 or PTO-1449, together with copies of the documents cited on that form, except for
copies not required to be submitted (e.g., copies of U.S. patents and U.S. published patent
applications need not be enclosed). This IDS and IDS Citation Form are being submitted before
the mailing of a final Office Action. It is respectfully requested that the cited references be
considered and that the enclosed copy of PTO/SB/08 be initialed by the Examiner to indicate
such consideration and a copy thereof returned to applicant(s).

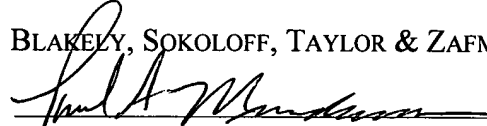05/22/2006 FFANAEIA 00000055 10632431
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The submission of this Information Disclosure Statement is not to be construed as a representation that a search has been made in the subject application and is not to be construed as an admission that the information cited in this statement is material to patentability.

The fee set in the amount of $180.00 for submission of the Information Disclosure Statement is enclosed herewith. Please charge any additional fees due to Deposit Account 02-2666. A duplicate copy of the Fee Transmittal (PTO/SB/17) is enclosed for this purpose.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Date: May 15, 2006

Paul A. Mendonsa, Reg. No. 42,879

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Los Angeles, CA 90025
Telephone: (503) 439-8778

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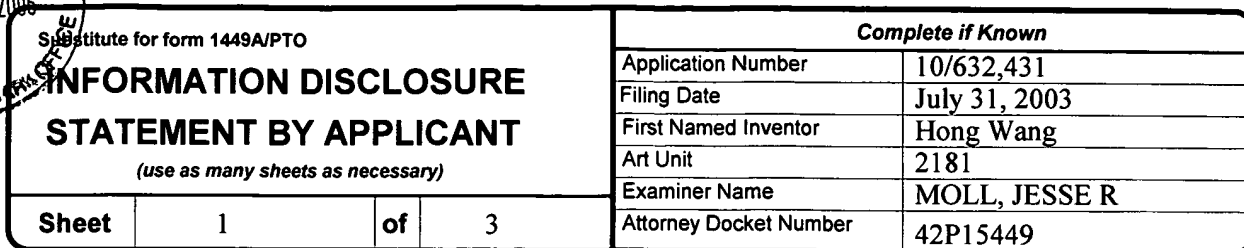
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INFORMATION DISCLOSURE
STATEMENT BY APPLICANT

(use as many sheets as necessary)

| Sheet | 1 | of | 3 |

Complete if Known	
Application Number	10/632,431
Filing Date	July 31, 2003
First Named Inventor	Hong Wang
Art Unit	2181
Examiner Name	MOLL, JESSE R
Attorney Docket Number	42P15449

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number — Number - Kind Code[2] (if known)	Publication Date Issue Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-2004/0154019 A1	08-05-2004	Aamodt et al.	
		US-2005/0055541 A1	03-10-2005	Aamodt et al.	
		US-2004/0154012 A1	08-05-2004	Wang et al.	
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document — Country Code[3]- Number[4] - Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]

Examiner Signature		Date Considered	

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[1]Applicant's unique citation designation number (optional). [2]See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3]Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4]For Japanese patent documents, the indication of the year of reign of the Emperor must precede the serial number of the patent document. [5]Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6]Applicant is to place a check mark here if English language Translation is attached.

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Substitute for form 1449A/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Application Number	10/632,431
				Filing Date	July 31, 2003
				First Named Inventor	Hong Wang
				Art Unit	2181
				Examiner Name	MOLL, JESSE R
Sheet	2	**of**	3	Attorney Docket Number	42P15449

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
		H. Akkary and M. Driscoll, "A Dynamic Multithreading Processor", In *Micro-31*, Proceedings of the 31st Annual International Symposium on Microarchitecture, 30 Nov.-2 Dec. 1998 Page(s):226 - 236.	
		J. G. Steffan, C. B. Colohan, A. Zhai, and T. C. Mowry, "A Scalable Approach to Thread-level Data Speculation", In *ISCA-27*, Proceedings of the 27th Annual International Symposium on Computer Architecture, June 2000, pages 1-12.	
		J. G. Steffan, C. B. Colohan, A. Zhai, and T. C. Mowry,. Improving Value Communication for Thread-level Speculation. In *HPCA-8*, Proceedings of the 8th Annual International Symposium on High-Performance Computer Architecture, Feb. 2-6, 2002, pages 65-75.	
		L. Hammond, M. Willey, and K. Olukotun, "Data Speculation Support for a Chip Multiprocessor", In *ASPLOS-VIII*, Proceedings of the 8th Annual International Conference on Architectural Support for Programming Languages and Operating Systems, Oct. 1998, pages 58-69.	
		V. Krishnan and J. Torrellas, "The Need for Fast Communication in a Hardware-Based Speculative Chip Multiprocessors", in *PACT-99*, Proceedings for the 1999 International Conference on Parallel Architectures and Compliation Techniques, Oct. 1999, page 24.	
		C. K. Luk, Tolerating Memory Latency through Software-Controlled Pre-Execution in Simultaneous Multithreading Processors, In *28th ISCA*, International Symposium on computer Architecture, June 2001, page 24.	
		T. Moshovos, D. Pnevmatikatos, A. Baniasadi, "Slice Processors: An Implementation of Operation-Based Prediction", Proceedings of the 15th Annual International Conference on Supercomputing, Italy, June 2001, pages 321-334.	

Examiner Signature		Date Considered	

*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication.

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			Art Unit	2181
			Examiner Name	MOLL, JESSE R
Sheet	3	**of** 3	Attorney Docket Number	42P15449

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T²
		<u>Speculative Precomputation on Chip Multiprocessors,</u> Jeffery A. Brown, Hong Wang, George Chrysos, Perry H. Wang, John P. Shen, at the *6th Workshop on Multithreaded Execution, Architecture, and Compilation (MTEAC-6)*, November, 2002.	
		M. Annavaram, J. Patel, E. Davidson. "Data Prefetching by Dependence Graph Precomputation". In *28th Annual International Symposium on Computer Architecture*, July 2001.	
		J. Collins, D. Tullsen, H. Wang, J. Shen, "Dynamic Speculative Precomputation". In *Micro 34*, Proceedings of the 34th Annual International symposium on Microarchitecture, December 2001, pages 306-317.	
		H. Wang, P. Wang, R. D. Weldon, S. Ettinger, H. Saito, M. Girkar, S. Liao, J. Shen. "Speculative Precomputation: Exploring the use of Multithreading for Latency". In *Intel Technology Journal*, Volume 6, Issue on Hyper-threading, February 2002.	
		P. Wang, H. Wang, J. Collins, E. Grochowski, R. Kling, J. Shen. "Memory Latency-Tolerance Approaches for Itanium Processor: Out-of-order Execution vs. Speculative Precomputation". In Proceedings of the 8th Annual *IEEE HPCA* International Symposium on High-Performance Computer Architecture, Feb, 2002.	
		C. Zilles and G. Sohi. "Execution-Based Prediction Using Speculative Slices". In *ISCA*, Proceedings of the 28th Annual International Symposium on Computer Architecture, Sweden, July 2001, pages 2-13.	
		S. Liao, P. Wang, G. Hoflehner, D. Lavery, J. Shen, "Post-Pass Binary Adaptation for Software-Based Speculative Precomputation", In *PLDI*, ACM Conference on Programming Language Design and Implementation, June 2002.	

Examiner Signature		Date Considered	

*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication.

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TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application No.	10/632,431
Filing Date	July 31, 2003
First Named Inventor	Hong Wang
Art Unit	2181
Examiner Name	MOLL, JESSE R

Total Number of Pages in This Submission	8	Attorney Docket Number	42P15449

ENCLOSURES   *(check all that apply)*

- ☒ Fee Transmittal Form
  - ☒ Fee Attached
- ☐ Amendment / Response
  - ☐ After Final
  - ☐ Affidavits/declaration(s)
- ☐ Extension of Time Request
- ☐ Express Abandonment Request
- ☒ Information Disclosure Statement
  - ☒ PTO/SB/08
- ☐ Certified Copy of Priority Document(s)
- ☐ Response to Missing Parts/ Incomplete Application
  - ☐ Basic Filing Fee
  - ☐ Declaration/POA
  - ☐ Response to Missing Parts under 37 CFR 1.52 or 1.53

- ☐ Drawing(s)
- ☐ Licensing-related Papers
- ☐ Petition
- ☐ Petition to Convert a Provisional Application
- ☐ Power of Attorney, Revocation Change of Correspondence Address
- ☐ Terminal Disclaimer
- ☐ Request for Refund
- ☐ CD, Number of CD(s)
  - ☐ Landscape Table on CD

Remarks

- ☐ After Allowance Communication to TC
- ☐ Appeal Communication to Board of Appeals and Interferences
- ☐ Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)
- ☐ Proprietary Information
- ☐ Status Letter
- ☒ Other Enclosure(s) *(please identify below):*

Copies of 15 cited references
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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	Paul A. Mendonsa, Reg. No. 42,879 BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
Signature	*[signature]*
Date	May 15, 2006

CERTIFICATE OF MAILING/TRANSMISSION

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Typed or printed name	Gayle Bekish		
Signature	*[signature]*	Date	May 15, 2006

FEE TRANSMITTAL
for FY 2005
Patent fees are subject to annual revision.

Complete if Known	
Application Number	10/632,431
Filing Date	July 31, 2003
First Named Inventor	Hong Wang
Examiner Name	MOLL, JESSE R
Art Unit	2181
Attorney Docket No.	42P15449

☐ Applicant claims small entity status. See 37 CFR 1.27.

TOTAL AMOUNT OF PAYMENT	($)	180.00

METHOD OF PAYMENT *(check all that apply)*

☒ Check ☐ Credit card ☐ Money Order ☐ None ☐ Other (please identify): _____

☒ Deposit Account Deposit Account Number: <u>02-2666</u> Deposit Account Name: <u>Blakely, Sokoloff, Taylor & Zafman LLP</u>

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)
☐ Charge fee(s) indicated below   ☐ Charge fee(s) indicated below, except for the filing fee
☒ Charge any additional fee(s) or underpayment of fee(s)   ☒ Credit any overpayments
  under 37 CFR §§ 1.16, 1.17, 1.18 and 1.20.

FEE CALCULATION

Large Entity		Small Entity			
Fee Code	Fee ($)	Fee Code	Fee ($)	Fee Description	Fee Paid
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet.	
2053	130	2053	130	Non-English specification	
1251	120	2251	60	Extension for reply within first month	
1252	450	2252	225	Extension for reply within second month	
1253	1,020	2253	510	Extension for reply within third month	
1254	1,590	2254	795	Extension for reply within fourth month	
1255	2,160	2255	1,080	Extension for reply within fifth month	
1401	500	2401	250	Notice of Appeal	
1402	500	2402	250	Filing a brief in support of an appeal	
1403	1,000	2403	500	Request for oral hearing	
1451	1,510	2451	1,510	Petition to institute a public use proceeding	
1460	130	2460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	180.00
1809	790	1809	395	Filing a submission after final rejection (37 CFR § 1.129(a))	
1810	790	2810	395	For each additional invention to be examined (37 CFR § 1.129(b))	

Other fee (specify) _____

SUBTOTAL (2)	($)	180.00

SUBMITTED BY

			Complete (if applicable)			
Name (Print/Type)	Paul A. Mendonsa	Registration No. (Attorney/Agent)	42,879	Telephone	(503) 439-8778
Signature				Date	05/15/06